

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application:

Claims 1 - 6 (canceled)

Claim 7 (currently amended): An amorphous carbon film, comprising:

an amorphous carbon layer; and

an interlayer disposed between a base material and the amorphous carbon layer, said interlayer containing at least one substance selected from the group consisting of B, Al, Ti, V, Cr, Zr, Nb, Mo, Hf, Ta, and W, and said interlayer having a thickness of 0.5 nm or greater 10 nm or less;

wherein on a base material side of said interlayer, there is a mixed layer which contains portions of the base material and the interlayer material and which has a thickness of 0.5 nm or greater and 10 nm or less.

Claim 8 (original): An amorphous carbon film as described in claim 7, wherein: said mixed layer and said interlayer have a combined thickness of 10 nm or less.

Claim 9 (currently amended): An amorphous carbon film according to any one of claims 7 and 8 6-to-8, wherein a thickness of said mixed layer is 0.5 nm or greater 5 nm or less.

Claim 10 (currently amended): An amorphous carbon film according to any one of

claims 7 and 8 6-to-8, wherein an average oxygen concentration contained in said mixed layer or in said mixed layer and interlayer is 1 at % or less.

Claims 11 - 17 (canceled)

Claim 18 (currently amended): An amorphous carbon film according to any one of claims 7 and 8 6-to-8, wherein said amorphous carbon layer has said film having a density of 2.8 g/cm³ or greater and 3.3 g/cm³ or less.

Claim 19 (currently amended): An amorphous carbon film according to any one of claims 7 and 8 6-to-8, said amorphous carbon layer has said film having a spin density of 1×10^{18} spins/cm³ or greater and 1×10^{21} spins/cm³ or less.

Claim 20 (currently amended): An amorphous carbon film according to any one of claims 7 and 8 6-to-8, wherein a concentration of carbon in the amorphous carbon layer [[film]] is 99.5 at % or greater, a concentration of hydrogen in the amorphous carbon layer [[film]] is 0.5 at % or less, a concentration of a rare gas element in the amorphous carbon layer [[film]] is 0.5 at % or less.

Claim 21 (currently amended): An amorphous carbon film according to any one of claims 7 and 8 6-to-8, wherein said amorphous carbon layer [[film]] is essentially formed from carbon.

Claim 22 (currently amended): An amorphous carbon film according to any one of claims 7 and 8 6-to-8, wherein Knoop hardness is 3000 or greater 7000 or less.

Claim 23 (currently amended): A method for manufacturing an amorphous carbon film according to any one of claims 7 and 8 6-to-8, comprising:

executing a sputter method or a cathode arc ion plating method or a laser ablation method; and

forming an amorphous carbon film with solid carbon as a raw material under an atmosphere which does not contain hydrogen.

Claim 24 (currently amended): A method for manufacturing an amorphous carbon film according to any one of claims 7 and 8 6-to-8further comprising:

executing a cathode arc ion plating method or laser ablation method, with solid carbon as raw material and under an atmosphere with a degree of vacuum of 0.05 Pa or lower; and

forming an amorphous carbon layer without introducing gas which contains hydrogen or rare gas.

Claim 25 (previously presented): A method for manufacturing an amorphous carbon film according to claim 23, further comprising: synthesizing said mixed layer by applying a negative bias voltage on said base material and using an ion injection method, plasma CVD method, sputter method, cathode arc ion plating method, or laser ablation method.

Claim 26 (previously presented): A method for manufacturing an amorphous carbon film according to claim 23, further comprising:

synthesizing said mixed layer by applying a negative bias voltage on said base material and using an ion injection method, plasma CVD method, sputter method, cathode arc ion plating method, or laser ablation method under an atmosphere which contains rare gas.

Claim 27 (currently amended): An amorphous carbon film coated material, comprising:

a material being coated with an amorphous carbon film according to any one of claims 7 and 8 ~~6 to 8~~.

Claim 28 (previously presented): An amorphous carbon film coated material, comprising:

a material being coated with an amorphous carbon film manufactured by a method according to claim 23.

Claim 29 (previously presented): A method for manufacturing an amorphous carbon film according to claim 24, further comprising:

synthesizing said mixed layer by applying a negative bias voltage on said base material and using an ion injection method, plasma CVD method, sputter method, cathode arc ion plating method, or laser ablation method.

Claim 30 (previously presented): A method for manufacturing an amorphous carbon film according to claim 24, further comprising:

synthesizing said mixed layer by applying a negative bias voltage on said base material and using an ion injection method, plasma CVD method, sputter method, cathode arc ion plating method, or laser ablation method under an atmosphere which contains rare gas.

Claim 31 (previously presented): An amorphous carbon film coated material, comprising: a material being coated with an amorphous carbon film manufactured by a method according to claim 24.

Claim 32 (previously presented): An amorphous carbon film coated material, comprising: a material being coated with an amorphous carbon film manufactured by a method according to claim 25.

Claim 33 (previously presented): An amorphous carbon film coated material, comprising:

a material being coated with an amorphous carbon film manufactured by a method according to claim 26.

Claim 34 (previously presented): An amorphous carbon film coated material, comprising:

a material being coated with an amorphous carbon film manufactured by a method according to claim 27.

Claim 35 (previously presented): An amorphous carbon film coated material, comprising: a material being coated with an amorphous carbon film manufactured by a method according to claim 28.